Mississippi State University  
Notice of Proposed Sole Source Purchase

189-42

Mississippi State University anticipates purchasing the item(s) listed below as a sole source purchase. Anyone objecting to this purchase shall follow the procedures outlined below.

1. Commodity or commodities to be purchased (make, model, description):

The Mississippi State Chemical Laboratory (MSCL) requests to purchase as a sole source item the Agilent 7890B Gas Chromatograph coupled to an Agilent 7000D Triple Quadrupole System (GC-MS/MS). This unit would include the self-cleaning source technology (JetClean), factory installed union for mid-column backflush, multimode inlet, 7693A autoinjector with heater/mixer/barcode reader, aluminum sample vial racks for use with heater or chiller, and NIST 2017 library.

1. Explanation of the need to be fulfilled by this item(s), how is it unique from all other options, and why it is the only one that can meet the specific needs of the department:

The MSCL is mandated under Mississippi Code, Title 57, Chapter 21-9 to provide analytical, chemical, and bacteriological services for regulatory control, in cooperation with the Mississippi Department of Agriculture and Commerce. One service provided to the state is the identification and quantitation of various chemicals, specifically pesticides. This new GC-MS/MS would double our abilities in the GC lab with sample flow and productivity while allowing more sensitivity than what we currently have. This system would also be the best choice for our laboratory because we are already using similar instruments and the consumables could be interchanged. Based upon the MSCL’s research, the Agilent 7890B/7000D has the following characteristics that make it the only option:

* Sensitivity: the IDL measurement for sensitivity is performed on site at installation to ensure proper system qualification. EI MRM IDL: 4.0 femtograms or less of OFN statistically derived at 99% confidence level from the area precision of eight sequential splitless injections of 1 uL 10 fg/uL OFN standards. MS/MS transition of m/z 272->222 100 msec dwell time.
* EI source design: EI source design of solid inert source material can be heated to 350 degrees.
* Quadrupole Mass Spectrometer Design: Dual gold coated monolithic quartz hyperbolic quadrupole mass filters with operating temperature up to 200°C
* MRM Speed: 800 MRMs/sec with a minimum dwell time of 0.5 msec with no change in chromatographic peak area.
* dMRM Capabilities: methods can be run which allow MRM time segments to be scheduled at intervals before and after chromatographic retention times. This allows for customization of MS scanning times which will increase the duty cycle and productivity of the system
* Collision Cell: Hexapole collision cell with He Quenching gas. High pressure cell operation for efficient collisional cooling and focusing of the ion beam without use of expensive gases such as argon or neon. High sensitivity with wide mass bandwidth eliminates the need to “tune on your compound” for optimum sensitivity
* Factory installed Union: Supports mid-column backflush. Provides more consistent retention times throughout the sample sequence, reduces run times, and reduces contamination.
* Retention Time Locking
* Gain Normalized Tune: 7000D adjusts voltages to maintain the same signal as the detector ages
* Self-Cleaning source: self-cleaning technology that introduces intermittent hydrogen gas to clean the source. This significantly reduces the operator time on maintenance.

The 7000-mass spec sensitivity is measured by IDL which is more accurate indication of true sensitivity (minimum detectable quantity) than signal-to-noise(S/N), particularly when background noise levels are very low, as with MS/MS measurements when only standard is injected. IDL verification is a more extensive (eight consecutive injections versus one, in case of S/N) and reliable test that is performed at installation to ensure proper system qualification.

High temperature source stays clean longer and does not require the frequent ion volume replacement found in some competitive designs. This ensures uninterrupted operation over long periods even with complex matrices.

MSMS Methodology interchangeable with single quad MS – system should be able to open a datafile and operate a method developed for a single quad. Method interchangeability between single and triple offer the user an additional MS system that can be used for either single quad or triple quad workflows

The Autoinjector must have the capability to rinse the syringe both pre and post injection with 2 separate solvents, A & B, of 0-15 times for each solvent. Flexible pre-, post-injection rinsing, washing and pumping assure the minimum chance of sample carryover with minimum usage of solvent and highest productivity.

The Autoinjector must have a range of injection volumes of 10 nanoliters up to 250 microliters depending upon the syringe size (10 nL with 1 uL syringe, 250 uL using 500 uL syringe). Allows for a wide range of sample concentrations to be analyzed without the need of pre-sample preparation.

The Autoinjector must have the capability of doing sandwich injections with up to 3 layers of additional liquid or an air gap for each layer. Sandwiched injections allow for greater versatility of sample type analysis.

The sample tray must have a 150-vial sample capacity. High sample capacity allows the user to run more samples without attention.

The autosampler tray shall allow for fully integrated optional barcode reader to allow reading of vial barcode labels. Allows for fully programmable single vial heating (35-80 degrees C) and mixing prior to injection. Allows for bidirectional mixing up to 4000 RPM. Barcode reader allow better tracking of the sample without manual operation

Inlet sealing system is built in standard with each S/SL inlet for quick, easy, injector liner changes in under 30 seconds. Fast, easy inlet maintenance helps minimize instrument downtime

Must allow these modes and be easily accessible:  
- split  
- splitless mode   
- Pressure-pulsed splitless mode.

The right mode for every sample is easily selected.

Split mode allows the user to introduce the appropriate amount of sample on high resolution capillary columns for analysis (e.g., gasoline analysis).   
Splitless mode allows for more trace analysis  
Pressure-pulsed splitless mode can reduce the amount of time spent in the vaporizing inlet, improve early eluting peaks. Pulsed Split is also available.

Accuracy: <± 2% full scale, Repeatability: <± 0.05 psi, Temperature coefficient:   
<± 0.01 psi/°C, Drift: <± 0.1 psi/  
6 months. This provides retention time repeatability and precision.

The MSCL requires a “workhorse” triple quadrupole mass spectrometer that is capable of analyzing low part-per-billion to part-per-trillion levels of herbicides, pesticides, pyrethroids, PCBs, and drugs. An instrument with above characteristics would meet the needs required by the MSCL and the combination of the required specifications is unique to Agilent at the given price point.

1. Name of company/individual selling the item and why that source is the only possible source that can provide the required item(s):

The company selling the Agilent 7890B/7000D Triple Quadrupole GC/MS is Agilent Technologies. No other instrument manufacturer sells new Agilent 7890B/7000D Triple Quadrupole GC/MS units.

1. Estimated cost of item(s) and an explanation why the amount to be expended is considered reasonable:

The estimated cost of the Agilent GC Triple Quadrupole would be $208,675.50. The amount is reasonable because the MSCL analyzes thousands of samples each year, and the GC lab needs an additional resource in order to keep up with the demand in the lab. The system will easily pay for itself in several years.

1. Explanation of the efforts taken by the department to determine this is the only source and the efforts used to obtain the best possible price:

MSCL personnel have attended exhibitions at meetings of the American Chemical Society and AOAC International to speak with different instrument manufacturers about their tools available for testing of pesticides. Considering all the information, the MSCL feels that the Agilent 7890B/7000D GCMSMS is the only viable long-term option.

Any person or entity that objects and proposes that the commodity listed is not sole source and can be provided by another person or entity shall submit a written notice to:

Don Buffum, CPPO  
Director of Procurement & Contracts  
[dbuffum@procurement.msstate.edu](mailto:dbuffum@procurement.msstate.edu)  
**Subject Line must read “Sole Source Objection”**

The notice shall contain a detailed explanation of why the commodity is not a sole source procurement. Appropriate documentation shall also be submitted if applicable.

If after a review of the submitted notice and documents, MSU determines that the commodity in the proposed sole source request can be provided by another person or entity, then MSU will withdraw the sole source request publication from the procurement portal website and submit the procurement of the commodity to an advertised competitive bid or selection process.

If MSU determines after review that there is only one (1) source for the required commodity, then MSU will appeal to the Public Procurement Review Board. MSU will have the burden of proving that the commodity is only provided by one (1) source.

.